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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,377	08/27/2001	Peter Heinrich Barber	DE920000069	2090

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EXAMINER
NICOLAS, WESLEY A

ART UNIT	PAPER NUMBER
1742	4

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Please find below and/or attached an Office communication concerning this application or proceeding.

mk-5

Office Action Summary	Application No. 09/682,377	Applicant(s) BARBER ET AL.	
	Examin r Wesley A. Nicolas	Art Unit 1742	

-- Th MAILING DATE of this communication appears on the cov r sh et with th correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-33 is/are pending in the application.

4a) Of the above claim(s) 17-32 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-16 and 33 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 3 3
4) ☒ Interview Summary (PTO-413) Paper No(s). 4 .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-16 and 33, drawn to an electrolytic method, classified in class 205, subclass 220.

   II. Claims 17-32, drawn to a solution, classified in class 106, subclass 1.18+.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as product (*i.e.* solution) and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product (*i.e.* solution) as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product (*i.e.* solution) can be used in a materially different process such as an electrolytic etching or non-electrolytic (electroless) process.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Anthony Canale on March 31, 2003, a provisional election was made **with** traverse to prosecute the invention of Group I, claims 1-16, and 33. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-32 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-4, 6-7, 14-16, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen (U.S. 6,197,181 B1).

Claim 1 is rejected because Chen teaches a method comprising (a) providing a plating solution on the surface of the substrate (col. 5, lines 34-40), (b) electroplating or electrolysis plating the metal or alloy on the surface of the substrate (col. 5, lines 34-40), and (c) introducing a stabilizing agent which keeps metal or alloy ions in the plating solution (col. 5, lines 41-51: "complexing agents").

Claim 2 is rejected because Chen teaches that the stabilizing agent prevents formation of precipitated salts on the surface of the substrate (col. 5, lines 41-51: "prevent the precipitation of copper hydroxide").

Claim 3 is rejected because Chen teaches that said stabilizing agent comprises an aqueous solution of a complexing agent for the plating metals (col. 7, lines 58-60: "D.I. water").

Claim 4 is rejected because Chen teaches that said complexing agent comprises an organic compound (col. 5, lines 41-50: "EDTA").

Claim 6 is rejected because Chen teaches that the complexing agent for the plating metals comprises citrate or EDTA (col. 5, lines 51-50: "EDTA", and Table 1: "Citrate").

Claim 7 is rejected because Chen teaches that the complexing agent is present in the molar ratio of 1 to 4 (compared to copper sulfate which is in the range of 0.03 to 0.25 M) (col. 5, lines 34-50).

Claim 14 is rejected because Chen teaches that the stabilizing agent comprises a mixture of an aqueous solution of a complexing agent for the plating metals and an acid (col. 5, lines 41-51: complexing agent and col. 5, lines 58-62: "boric acid").

Claim 15 is rejected because Chen teaches that the stabilizing agent is contained in the plating solution (col. 5, lines 34-40).

Claim 16 is rejected because Chen teaches that the substrate comprises a semiconductor wafer (col. 7, line 52: "semiconductor wafers").

Claim 33 is rejected because Chen teaches a method for plating a metal alloy on a surface of a substrate by electrolytic activity (col. 5, line 52: "electrolytic bath") using a plating solution on the surface wherein the improvement comprises introducing a stabilizing agent onto the substrate surface in order to keep the metal alloy ions in the plating solution (col. 5, lines 41-51: "prevent precipitation...").

9. Claims 1-4, 6, 8-10, 12-16, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsunaga et al. (6,118,280).

Claim 1 is rejected because Matsunaga et al. teach a method comprising (a) providing a plating solution on the surface of the substrate (col. 7, lines 28-45), (b) electroplating or electrolysis plating the metal or alloy on the surface of the substrate

(col. 12, lines 42-48), and (c) introducing a stabilizing agent which keeps metal or alloy ions in the plating solution (col. 7, lines 55-61: "complexing agent").

Although Matsunaga et al. fail to specifically teach that the stabilizing agent (*i.e.* complexing agent) prevents formation of precipitated salts on the surface of the substrate, claim 2 is rejected because similar processes can reasonably be expected to yield products which inherently have the same properties. In re Spada, 15 USPQ2d 1655 (CAFC 1990).

Claim 3 is rejected because Matsunaga et al. teach that said stabilizing agent comprises an aqueous solution of a complexing agent for the plating metals (col. 7, lines 55-61: "complexing agent").

Claim 4 is rejected because Matsunaga et al. teach that said complexing agent comprises an organic or inorganic compound (col. 7, lines 55-61: "ammonium ion...organic acids...chelating agents").

Claim 6 is rejected because Matsunaga et al. teach that the complexing agent for the plating metals comprises EDTA (col. 7, line 58: "EDTA").

Claim 8 is rejected because Matsunaga et al. teach that the stabilizing agent comprises an acid (col. 7, lines 62-65: "aqueous solution of an acid").

Claim 9 is rejected because Matsunaga et al. teach that the acid does not form a low-soluble salt with the plated metals (col. 7, line 66 to col. 8, line 1: "preferably used for accurately controlling the deposition and elution of the metal component").

Claim 10 is rejected because Matsunaga et al. teach that the acid comprises an inorganic compound (col. 7, lines 62-65: "hydrochloric acid, sulfuric acid").

Claim 12 is rejected because Matsunaga et al. teach that the acid comprises an aqueous solution of hydrochloric or sulfuric acid (col. 7, lines 62-65: "aqueous solution...hydrochloric acid, sulfuric acid").

Claim 13 is rejected because Matsunaga et al. teach that the hydrochloric acid concentration is about 0.1 mol/kg (col. 14, line 40: "0.1N").

Claim 14 is rejected because Matsunaga et al. teach that the stabilizing agent comprises a mixture of an aqueous solution of a complexing agent for the plating metals and an acid (col. 7, lines 55-65: "complexing agent...acid").

Claim 15 is rejected because Matsunaga et al. teach that the stabilizing agent is contained in the plating solution (col. 7, lines 55-65).

Claim 16 is rejected because Matsunaga et al. teach that the substrate comprises a semiconductor wafer (col. 1, lines 5-35: "semiconductor").

Claim 33 is rejected because Matsunaga et al. teach a method for plating a metal alloy on a surface of a substrate by electrolytic activity (col. 8, lines 8-10) using a plating solution on the surface wherein the improvement comprises introducing a stabilizing agent onto the substrate surface in order to keep the metal alloy ions in the plating solution (col. 7, line 55 to col. 8, line 1: "controlling the...elution of the metal component").

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga et al. (6,118,280) as applied to claims 1 and 8 above.

Matsunaga et al. are as applied, argued, and disclosed above and incorporated herein but fail to specifically teach that the complexing agent or acid comprises a mixture of an organic and inorganic compound.

Claims 5 and 11 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have mixed an organic compound and inorganic compound as the stabilizing agent because Matsunaga teach that either an organic compound (EDTA or organic acid: col. 7, lines 56-59) or an inorganic compound (ammonium ion: col. 7, lines 55-56) may be used which would have increased the effectiveness of the stabilizing agent by complexing with all possible metal ions that do not plate out on the substrate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley Nicolas whose telephone number is (703)305-0082. The examiner can normally be reached on Mon.-Thurs. from 7am to 5pm.

The Supervisory Primary Examiner for this Art Unit is Roy King whose telephone number is (703) 308-1146.

The fax number for this Group is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Wesley A. Nicolas

May 27, 2003